

THE STATE OF DELAWARE

DEPARTMENT OF TRANSPORTATION

SPECIFICATION AND CONSTRUCTION PLANS FOR:

BR. 1-714 ON CHAPMAN RD.

OVER I-95

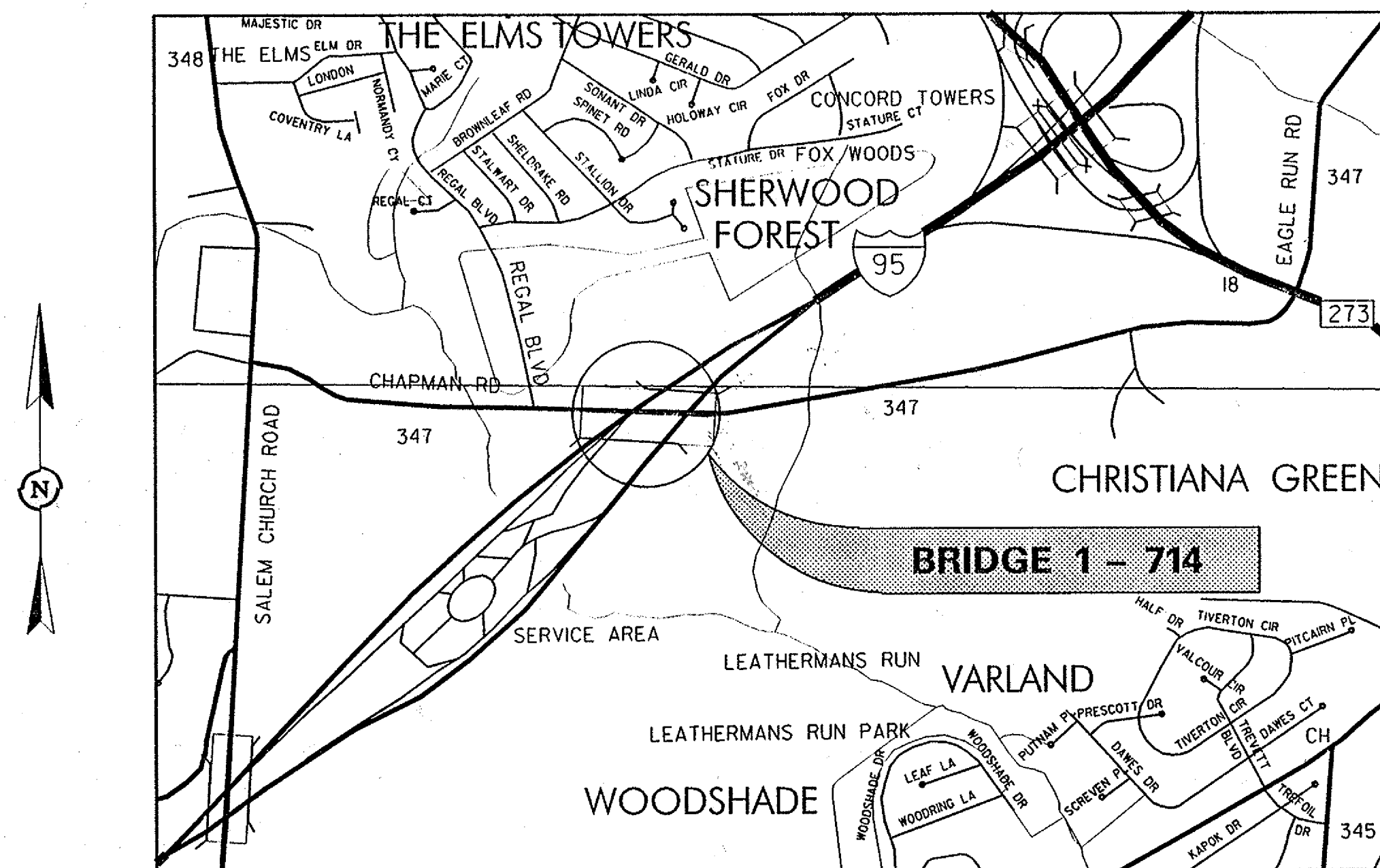
CONTRACT NUMBER 94-074-07

FEDERAL AID PROJECT NUMBER BRN-N347(1)

ROADWAY LENGTH 350.0 FEET = .066 MILES

STRUCTURE LENGTH 588.5 FEET = .111 MILES

TOTAL LENGTH 938.5 FEET = .177 MILES



LOCATION MAP

CONTRACT	COUNTY	M.R. NO.	F.H.W.A. REG. NO.	FEDERAL AID PROJECT NUMBER	SHEET NO.
94-074-07	NEW CASTLE	714	3	BRN-N347(0)	1
DESIGN DESIGNATION				SCALES	
FUNCTIONAL CLASS				PLAN SHEET: 1" =	
TYPE OF CONSTRUCTION REHABILITATION				PROFILE SHEET:	
A.D.T. CURRENT				Horizontal: 1" =	
A.D.T. PROJECTED				Vertical: 1" =	
D.H.V. PROJECTED				DETAIL SHEET: 1" =	
DESIGN SPEED					
% TRUCKS					
DIRECTION OF DISTRIBUTION %					
CLEAR ZONE (S)					
INDEX OF SHEETS					
SHEET N ^o	TABLE OF CONTENTS				
1	TITLE SHEET				
2	QUANTITY SUMMARY, GENERAL AND PROJECT NOTES				
3	PLAN, PROFILE AND SECTION (EXISTING)				
4	PLAN, PROFILE AND SECTION (PROPOSED)				
5	SIDEWALK MODIFICATION DETAILS				
6	GUARDRAIL TO BARRIER CONNECTION				
7-8	BCT DETAILS				
9	SIGNING AND STRIPING				
10	DETOUR PLAN				
11-13	STANDARD SHEETS (G-2-9, G-4-7, AND G-5)				

MILEPOST

UTILITIES LEGEND

DELMARVA POWER & LIGHT (ELECTRIC) --- D.P.L. (E) BURIED ---

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED _____ 19 ____

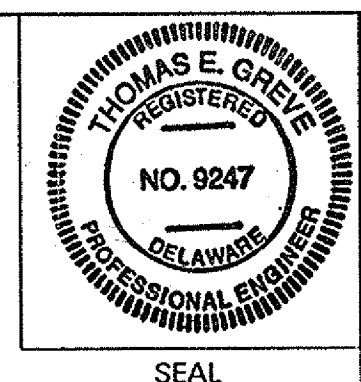
DIVISION ADMINISTRATOR

RECOMMENDED

Thomas E. Greve

PROJECT ENGINEER

RECOMMENDED 7/13 19 94

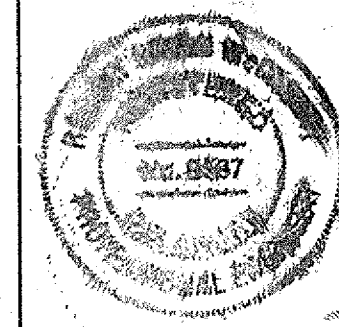


RECOMMENDED

Robert E. McLaughlin

STORMWATER ENGINEER

RECOMMENDED 7/13 19 94



RECOMMENDED

ROAD DESIGN ENGINEER

RECOMMENDED _____ 19 ____

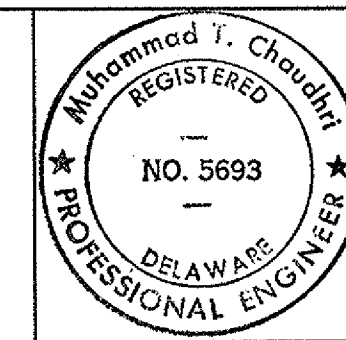
SEAL

RECOMMENDED

N. Chaudhri

BRIDGE ENGINEER

RECOMMENDED 7/13 19 94

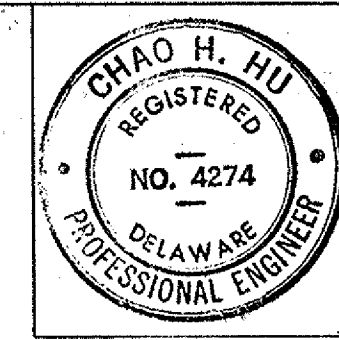


RECOMMENDED

Chao H. Hu

DESIGN ENGINEER

RECOMMENDED July 13 19 94



APPROVED

Raymond M. Harbison, Jr.

CHIEF ENGINEER

APPROVED July 13 19 94



QUANTITY SUMMARY, GENERAL AND PROJECT NOTES

ADDENDUMS	
2	DELETE ITEM 748014
	ADD ITEM 748001 AS SHOWN
	A. W. F. - 8/1/94

ITEM		* 202000	211002	302002	401002	401003	602543	602544	602580	705006	720001	725000	726000	** 742500	748001	748014	758000	760001	760006	762001	762002	763000	763500
ITEM TITLE		EXCAVATION AND EMBANKMENT	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL)	GRADED AGGREGATE BASE COURSE, TYPE B	HOT-MIX, HOT LAID BITUMINOUS CONCRETE PAVEMENT, TYPE B	HOT-MIX, HOT LAID BITUMINOUS CONCRETE PAVEMENT, TYPE C	FURNISHING LATEX CONCRETE	CONSTRUCTING LATEX CONCRETE OVERLAY	PARTIAL REMOVAL OF P.C.C. MASONRY	P.C.C. SIDEWALK, VARIABLE DEPTH	GALVANIZED STEEL BEAM GUARDRAIL (STEEL POST)	GUARDRAIL TO BARRIER CONNECTION (APPROACH TYPE)	BREAKAWAY CABLE TERMINAL ASSEMBLY	FLAGGER, NEW CASTLE COUNTY	PAINTING OF WHITE OR YELLOW, 4" LINE	PERMANENT PAVEMENT STRIPPING - ALLOY THERMOPLASTIC - 42	REMOVAL OF EXISTING P.C.C. PAVEMENT, CURB, SIDEWALK, ETC.	PAVEMENT MILLING, CONCRETE	PAVEMENT MILLING, HOT MIX, 2" DEPTH	SAW CUTTING, HOT MIX	SAW CUTTING, CONCRETE (FULL DEPTH)	INITIAL EXPENSE	MAINTENANCE OF TRAFFIC
UNIT		C. Y.	L. F.	SY-IN	TON	TON	C. Y.	S. Y.	C. Y.	S. F.	L. F.	EACH	EACH	HOUR	L. F.	L. F.	S. Y.	SY-IN	S. Y.	L. F.	L. F.	L. S.	L. S.
SHEET NO. 0003	FROM STA. N/A TO STA. N/A	175	430	3710	75	195	200	1840	10	80	400	2	2	50	3740	3740	10	2750	2800	40	30	L.S.	L.S.
TOTAL		175	430	3710	75	195	200	1840	10	80	400	2	2	50	3740	3740	10	2750	2800	40	30	L.S.	L.S.
PROPOSAL		175	430	3710	75	195	200	1840	10	80	400	2	2	50	3740	3740	10	2750	2800	40	30	L.S.	L.S.

C

FEDERAL

*

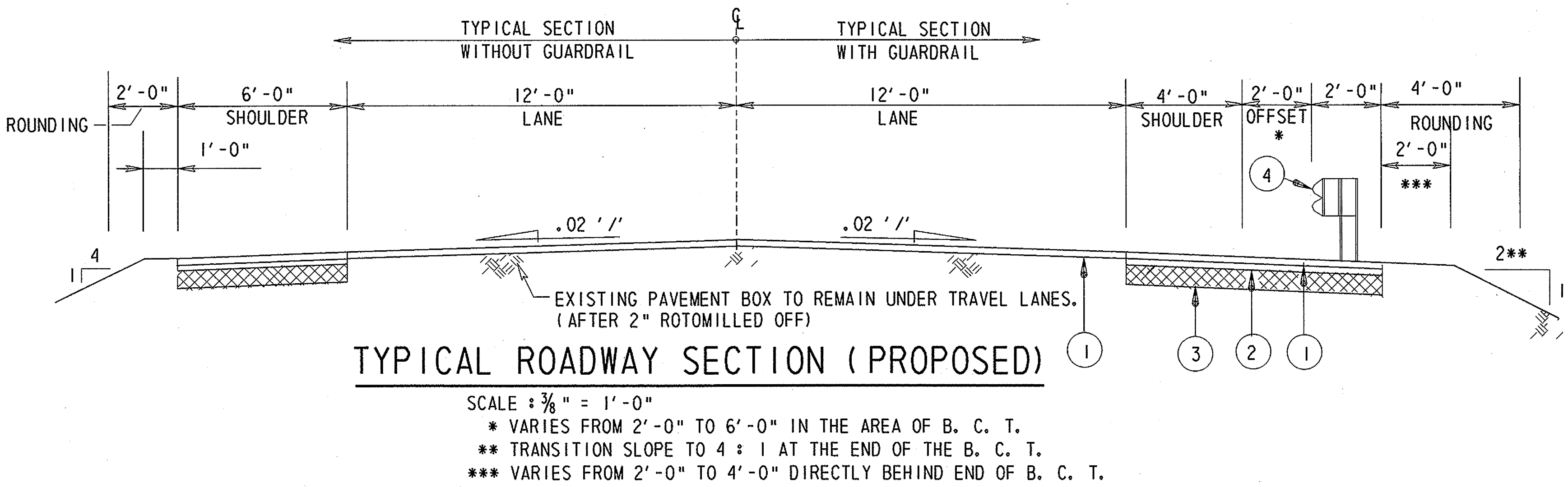
FIXED Q

**

FIXED PR

QUANTITY LEGEND

- C FEDERAL AID FUNDED BRIDGE CONSTRUCTION
* FIXED QUANTITY ITEM: REFER TO SECTION 109.06 OF THE STANDARD SPECIFICATIONS
** FIXED PRICE



LEGEND

- 1 2" HOT-MIX, HOT LAID BITUMINOUS CONCRETE PAVEMENT, TYPE "C"
- 2 2" HOT-MIX HOT LAID BITUMINOUS CONCRETE PAVEMENT, TYPE "B"
- 3 6" GRADED AGGREGATE BASE COURSE TYPE "B"
- 4 GALVANIZED STEEL BEAM GUARDRAIL (STEEL POSTS)

GENERAL NOTES

THIS CONTRACT IS TO BE BUILT UNDER THE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED JULY 1985, THE SUPPLEMENTAL SPECIFICATIONS THERETO, THE GENERAL AND PROJECT NOTES, THESE PLANS AND AS AMENDED BY THE SPECIAL PROVISIONS.

MAINTENANCE OF TRAFFIC - ALL WORK SHALL BE PERFORMED IN A MANNER THAT WILL INSURE THE LEAST PRACTICABLE OBSTRUCTION TO TRAFFIC CONSISTENT WITH SAFETY AND SHALL COMPLY WITH THE DEPARTMENT MANUAL ENTITLED "TRAFFIC CONTROLS FOR STREETS AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY, AND EMERGENCY OPERATION DATED MARCH 1, 1993 (OR MOST CURRENT AT THE TIME OF ADVERTISEMENT) HEREINAFTER THIS MANUAL SHALL BE REFERRED TO AS THE TRAFFIC CONTROL MANUAL.

BEFORE EXCAVATION IS STARTED IN AREAS OF UNDERGROUND UTILITIES, THE CONTRACTOR SALL GIVE NOTIFICATION BY TELEPHONE BY CALLING "MISS UTILITY" AT 1-800-282-8555. ALL UTILITIES PLOTTED ON PLAN SHEETS ARE FROM THE BEST AVAILABLE INFORMATION. ANY CONFLICTS OF THESE UTILITIES WITH PROPOSED CONSTRUCTION SHALL BE COORDINATED BY THE CONTRACTOR WITH THE ENGINEER AND THE UTILITY COMPANY INVOLVED.

PROJECT NOTES

LOCATION
REHABILITATION OF BRIDGE # 1-714 ON CHAPMAN ROAD OVER I-95, WEST OF CHRISTIANA, DELAWARE

PORTLAND CEMENT CONCRETE
STRUCTURAL ELEMENTS OF PORTLAND CEMENT CONCRETE SHALL BE AS NOTED: (F'C = 28 DAY COMPRESSIVE STRENGTH)
CLASS B - BRIDGE SIDEWALKS (F'C = 4500 P.S.I.)
LATEX CONCRETE DECK SLAB (F'C = 5000 P.S.I.)

MIX REQUIREMENTS SHALL CONFORM TO SECTION 812 OF THE SPECIFICATIONS. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE NOTED.

KEYED CONSTRUCTION JOINTS SHALL BE 2" X 4" OR AS NOTED. ALL EXPOSED CONSTRUCTION JOINT EDGES SHALL HAVE A 3/4" V-NOTCH.

ALL AREAS DISTURBED BY THE CONTRACTOR'S OPERATION OUTSIDE THE LIMITS OF CONSTRUCTION SHALL BE TOPSOILED, SEEDED AND MULCHED. PAYMENT SHALL BE INCIDENTAL TO THE CONTRACT.

THE CONTRACTOR SHALL REMOVE THE EXISTING GUARDRAIL TO THE LIMITS SHOWN ON THE PLANS. PAYMENT UNDER ITEM 211002 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS (GUARDRAIL).

EXISTING DRAIN PIPES ON WEST APPROACH WITHIN THE PROJECT LIMITS SHALL BE CLEANED AND FLUSHED. PAYMENT INCIDENTAL TO ITEM 202000 - EXCAVATION AND EMBANKMENT.

PROJECT NOTES (cont.)

DURING THE DURATION OF THE FULL ROADWAY CLOSURE, (7 CALENDER DAYS) THE CONTRACTOR SHALL PLACE PORTABLE CONCRETE SAFETY BARRIER ACROSS THE ROADWAY AT BOTH ENDS OF THE JOB. THE BARRIER SHALL BE OBTAINED FROM THE BEAR YARD. PAYMENT FOR THE PICKUP, DELIVERY, SETTING, REMOVAL, RETURN TO BEAR YARD, AND ALL OTHER INCIDENTAL REQUIRED SHALL BE PAID UNDER ITEM 763500 - MAINTENANCE OF TRAFFIC.

ALL THE CONSTRUCTION WILL BE ACCOMPLISHED WITHIN THE EXISTING RIGHT OF WAY.

THE DEPARTMENT WILL SET-UP THE SIGNED DETOUR ROUTE.

THE DEPARTMENT SHALL TAKE ELEVATIONS AT 10' INTERVALS OF THE EXISTING DECK AND APPROACH ROADWAY PRIOR TO ANY MILLING OPERATIONS. THIS INFORMATION SHALL BE USED TO ESTABLISH A NEW SMOOTH PROFILE WHICH CLOSELY RESEMBLES THE EXISTING PROFILE AND CROSS SLOPE.

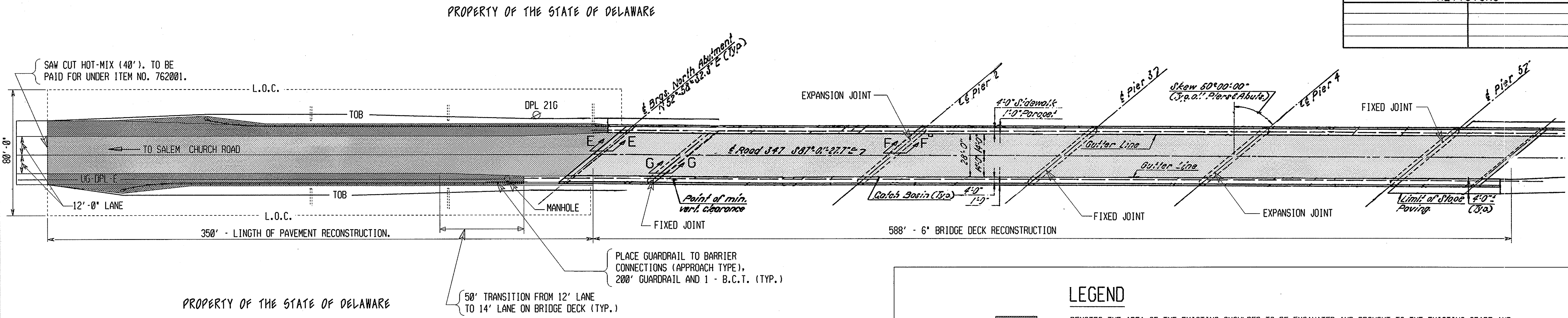
AFTER MILLING OF THE CONCRETE DECK, THE DECK SHALL BE CHECKED FOR UNSOUND CONCRETE AS DETERMINED BY THE ENGINEER. ALL UNSOUND CONCRETE SHALL BE REMOVED. PAYMENT UNDER ITEM 602580 - PARTIAL REMOVAL OF P.C.C. MASONRY. ADDITIONAL CONCRETE TO REPAIR DETERIORATED AREAS SHALL BE PAID UNDER ITEM 602543 - FURNISHING LATEX CONCRETE.

ANY HOT-MIX PATCHING REQUIRED, AS DETERMINED BY THE ENGINEER, SHALL BE COMPLETED AS DIRECTED AND TO THE SATISFACTION OF THE ENGINEER. PAYMENT SHALL BE INCIDENTAL TO ITEM 401003 - HOT-MIX, TYPE C.

IF THE CONTRACTOR ELECTS TO WORK AT NIGHT, HE/SHE IS RESPONSIBLE FOR ALL THE NECESSARY LIGHTING. PAYMENT SHALL BE INCIDENTAL TO ITEM 602544 - CONSTRUCTING LATEX CONCRETE OVERLAY.

PLAN, PROFILE AND SECTION (PROPOSED)

REVISIONS



PROPERTY OF THE STATE OF DELAWARE

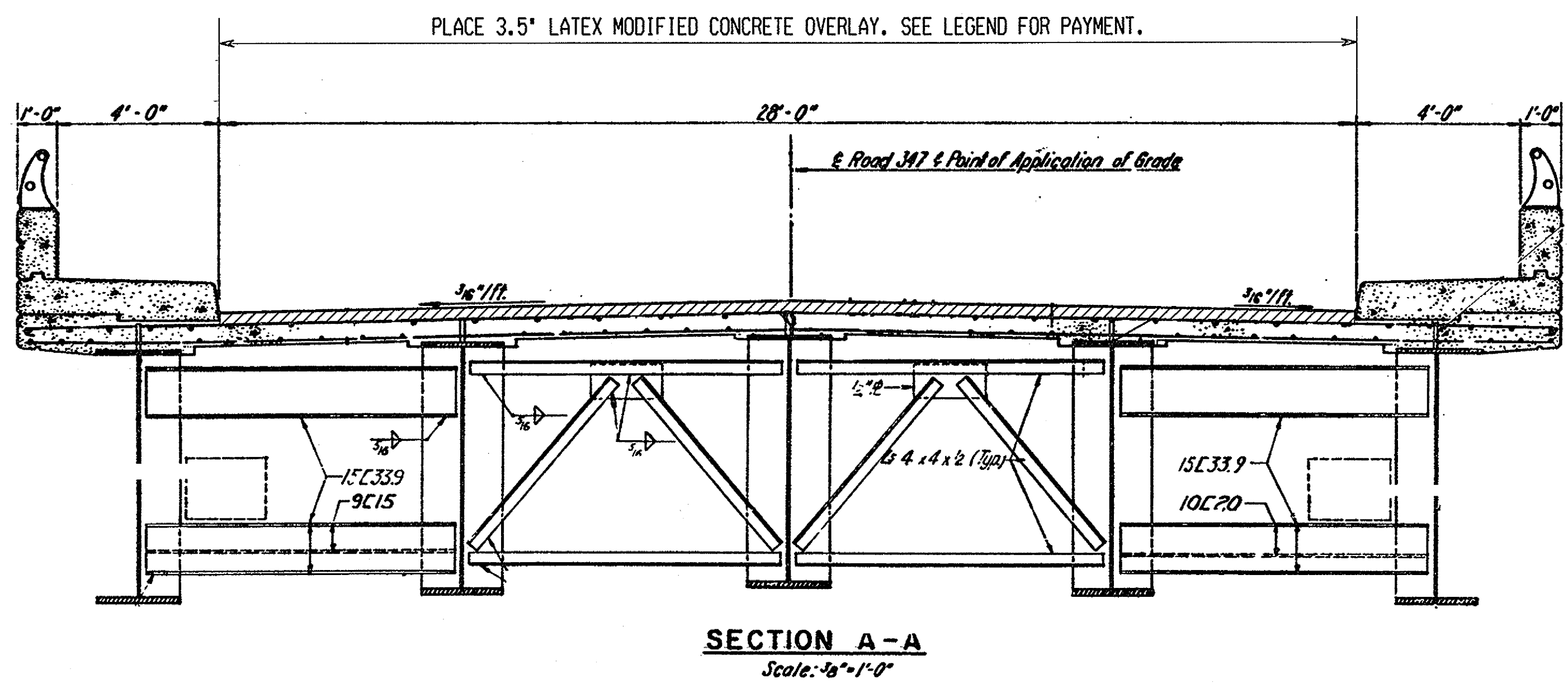
PLAN
Scale: 1"=30'

LEGEND

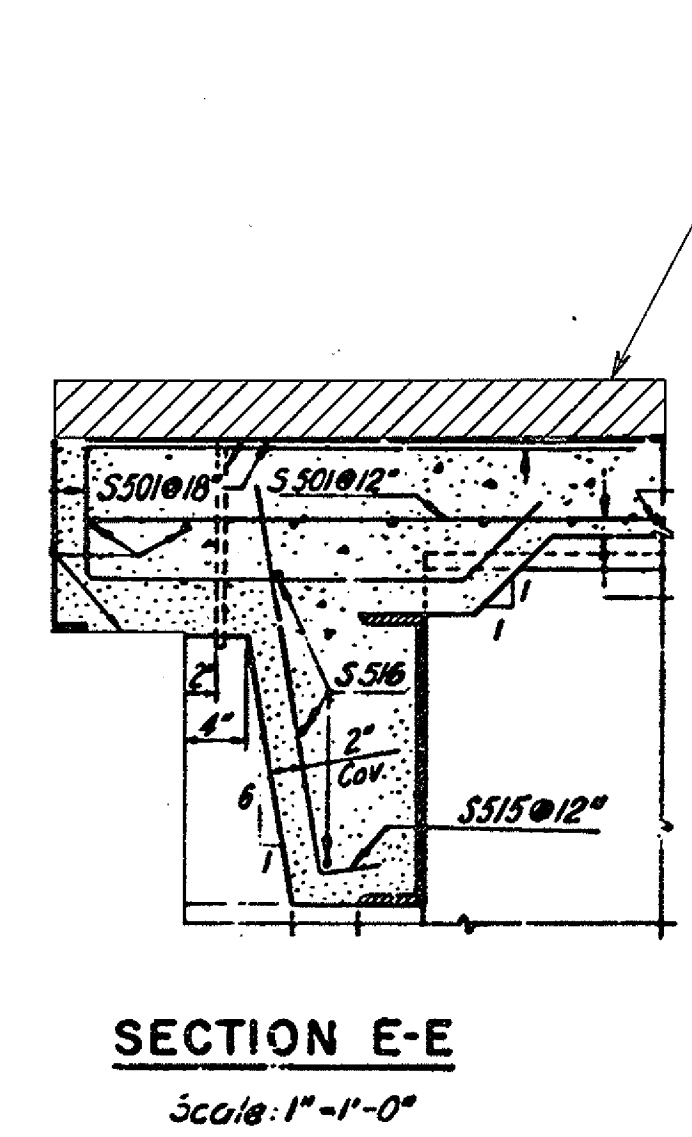
DENOTES THE AREA OF THE EXISTING SHOULDER TO BE EXCAVATED AND BROUGHT TO THE EXISTING GRADE AND CROSS SLOPE WITH: 6" GRADED AGGREGATE BASE COURSE TYPE "B", 2" HOT-MIX HOT LAID BITUMINOUS CONCRETE PAVEMENT TYPE "B", AND 2" HOT-MIX HOT LAID BITUMINOUS CONCRETE PAVEMENT TYPE "C". PAYMENT UNDER ITEM NO. 202000, 302002, 401002, AND 401003 RESPECTIVELY.

DENOTES THE AREA OF THE EXISTING ROADWAY TO BE ROTOMILLED (2" DEPTH), THEN BROUGHT TO THE EXISTING GRADE AND CROSS SLOPE WITH 2" HOT-MIX HOT LAID BITUMINOUS CONCRETE PAVEMENT TYPE "C". PAYMENT UNDER ITEM NO. 760006 (PAVEMENT MILLING, HOT-MIX, 2" DEPTH) AND 401003

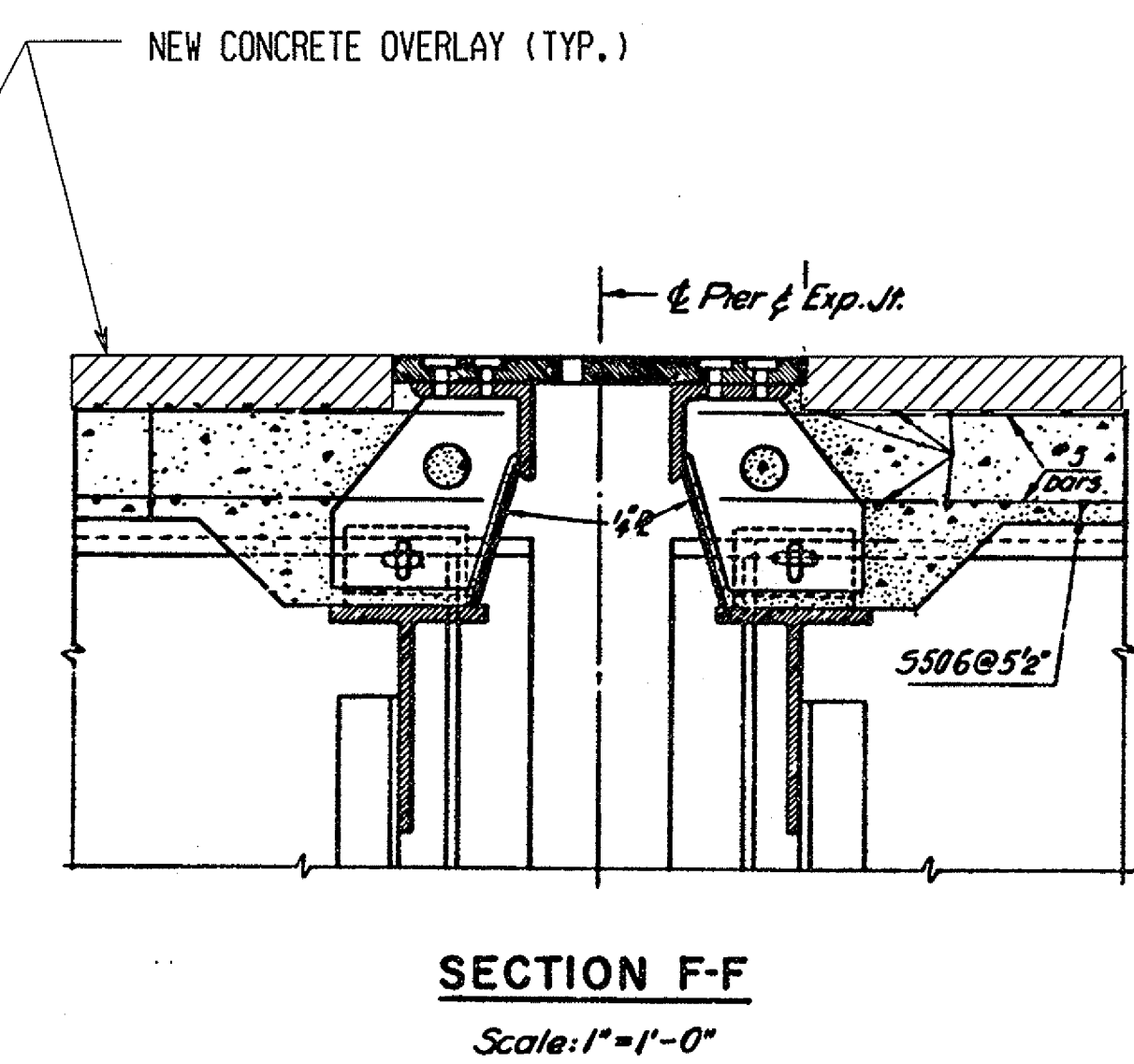
& DENOTE THE AREA OF THE BRIDGE DECK TO BE REMOVED, THEN BROUGHT TO THE EXISTING GRADE AND CROSS SLOPE WITH 3.5" LATEX CONCRETE. PAYMENT UNDER ITEM NO. 760006 (PAVEMENT MILLING, HOT-MIX 2" DEPTH), 760001 (PAVEMENT MILLING, CONCRETE), 602543 (FURNISHING LATEX CONCRETE), AND 602543 (CONSTRUCTING LATEX CONCRETE OVERLAY).



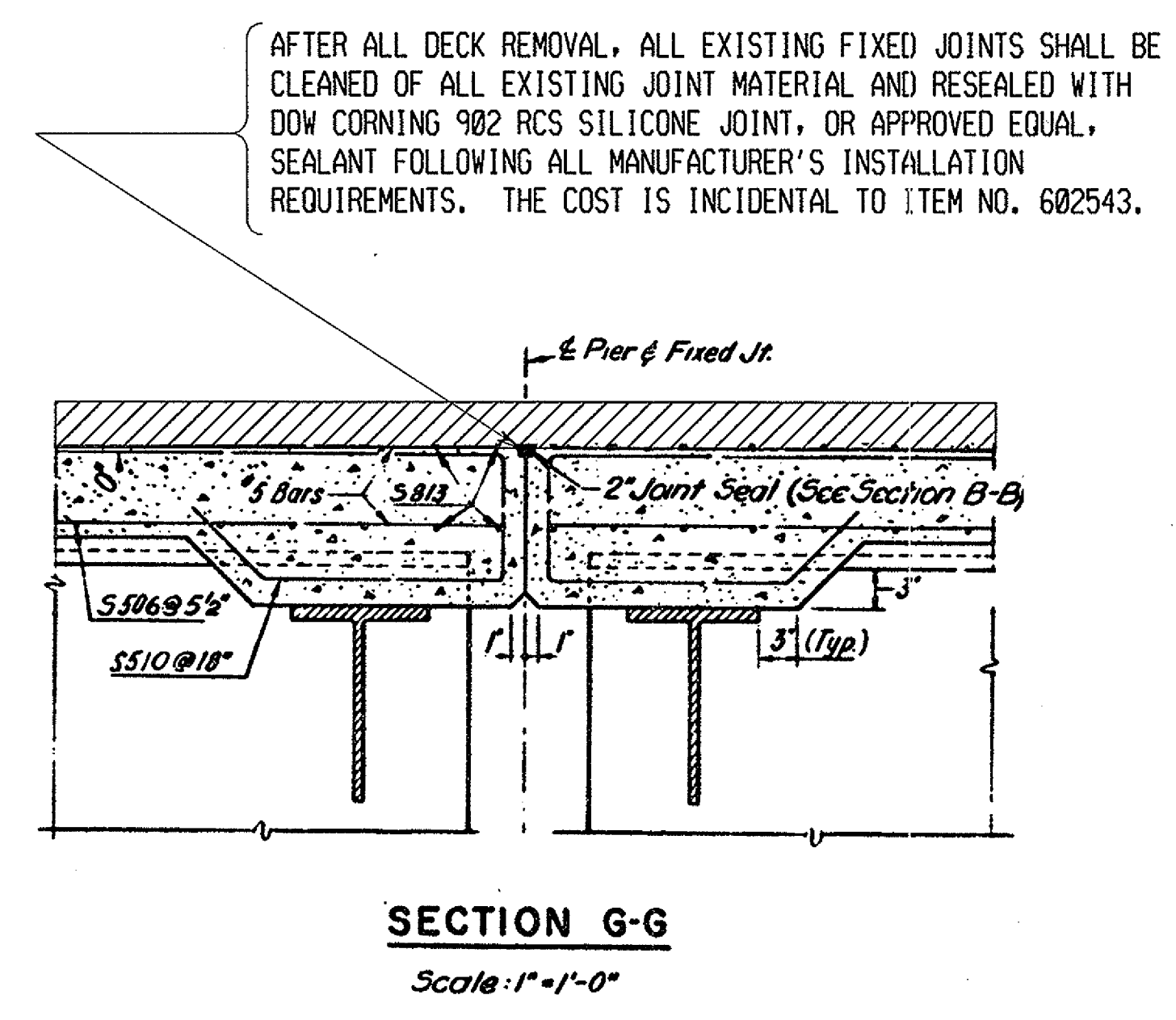
SECTION A-A
Scale: 3/8"=1'-0"



SECTION E-E
Scale: 1"=1'-0"



SECTION F-F
Scale: 1"=1'-0"

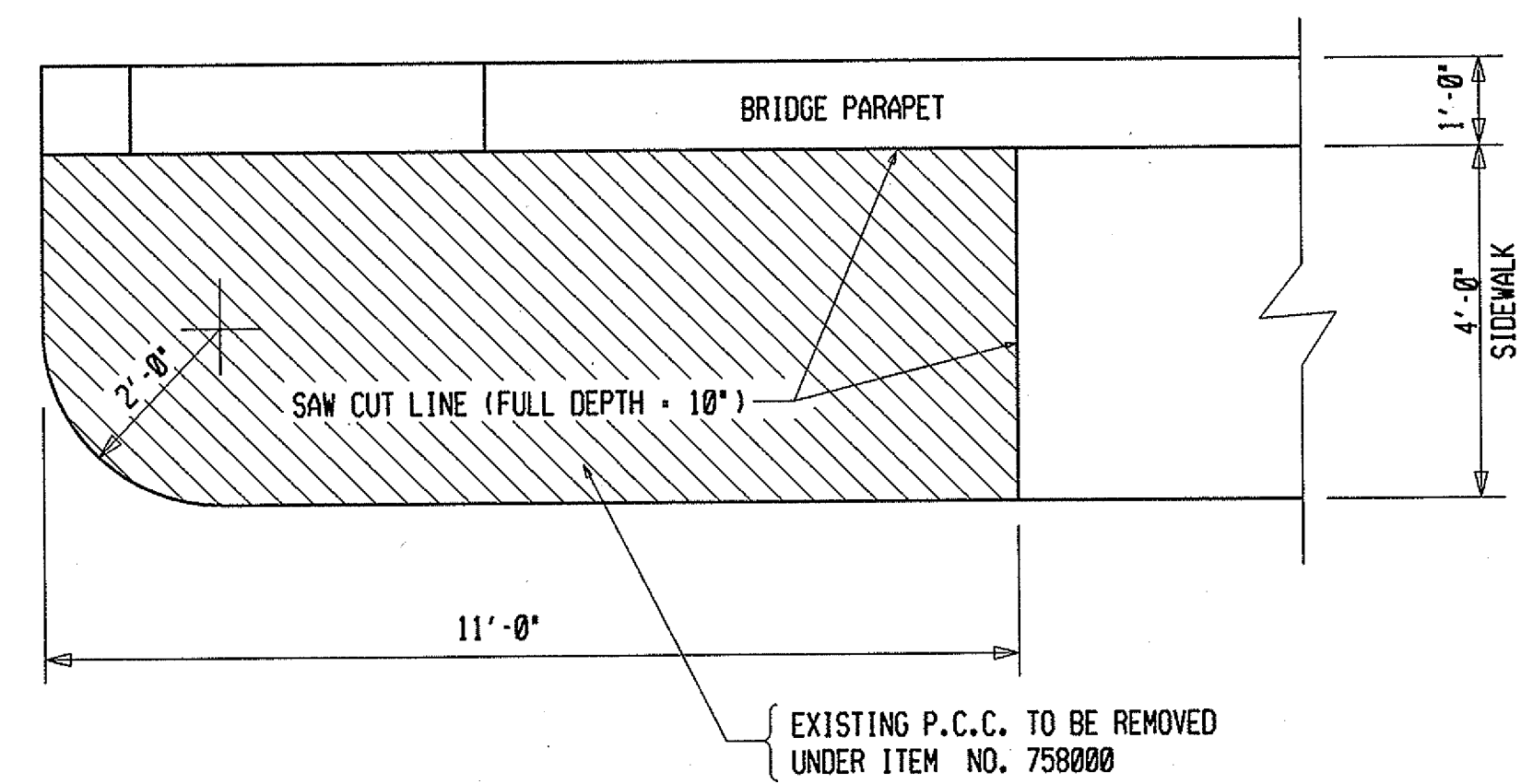
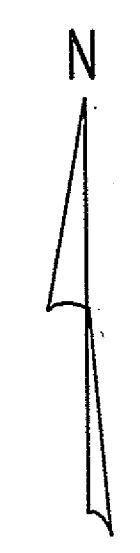


SECTION G-G
Scale: 1"=1'-0"

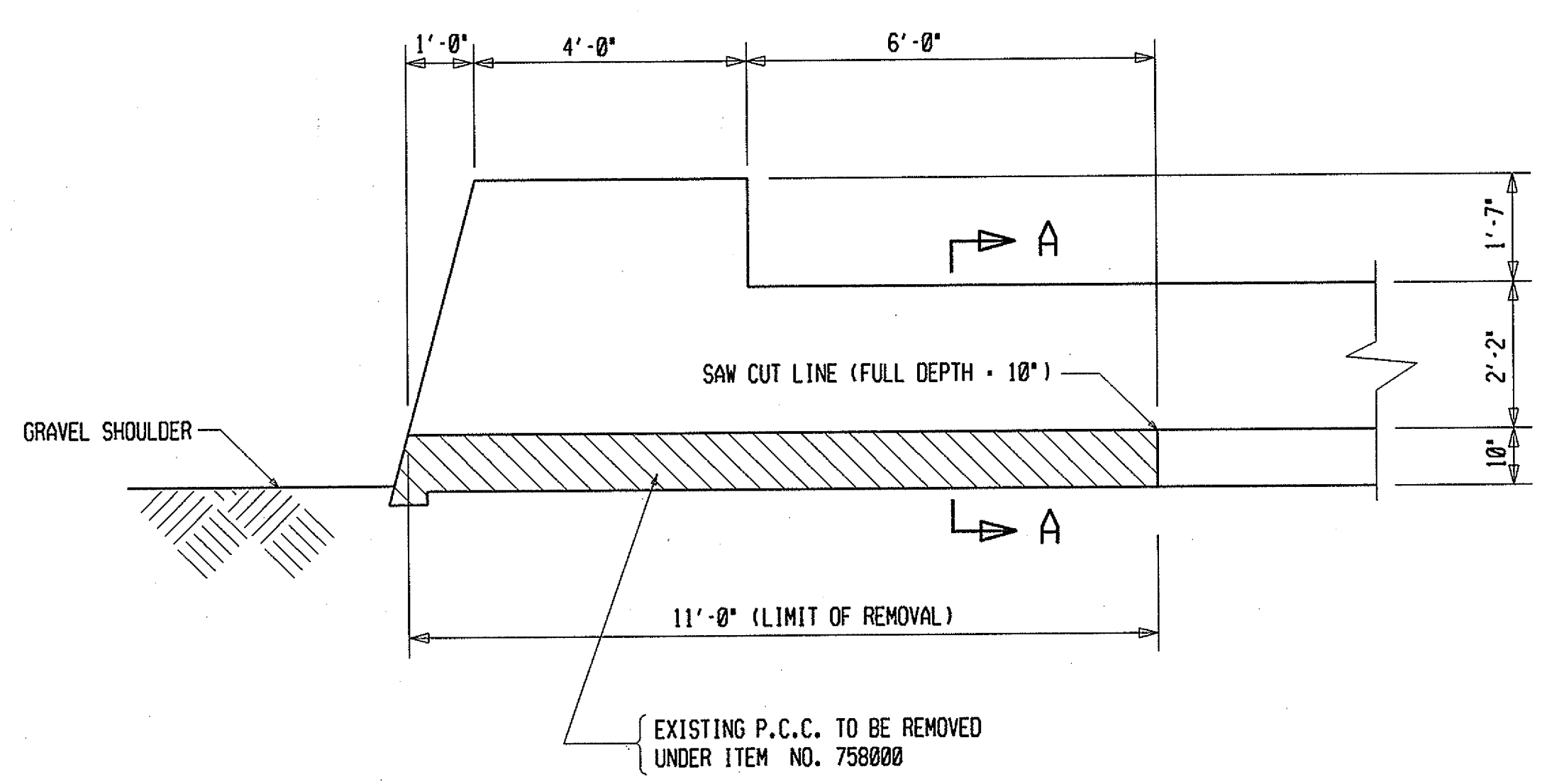
USR3/
CADD DESIGN AMENDED W/ EAQ CHKD. M. T. C.

SIDEWALK MODIFICATION DETAILS

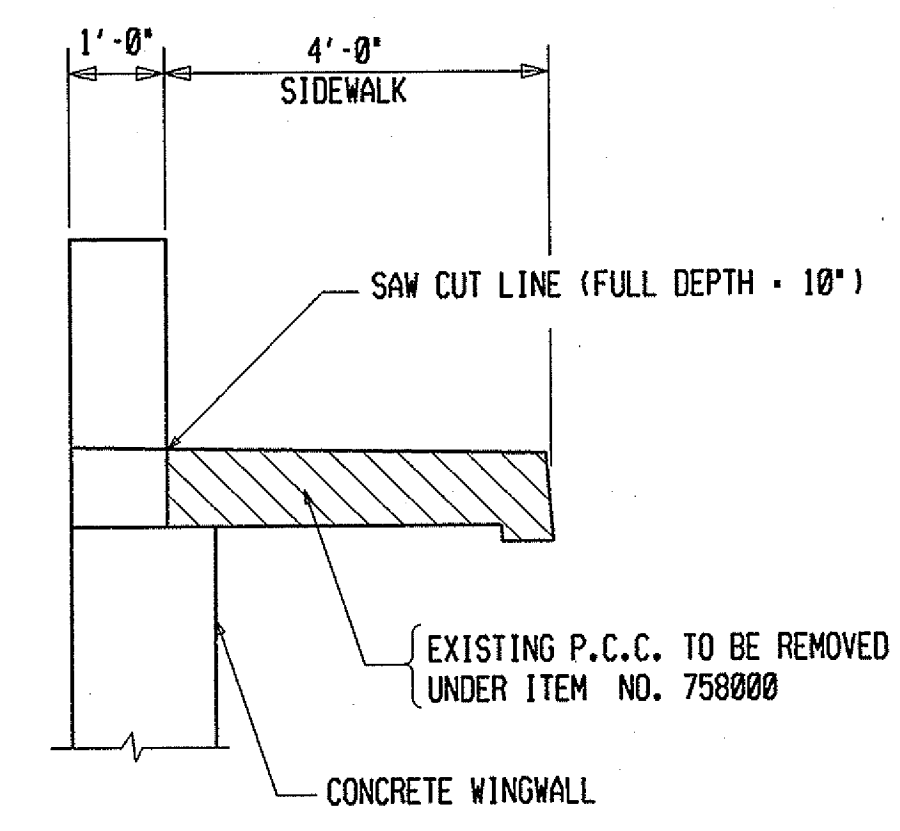
REVISIONS



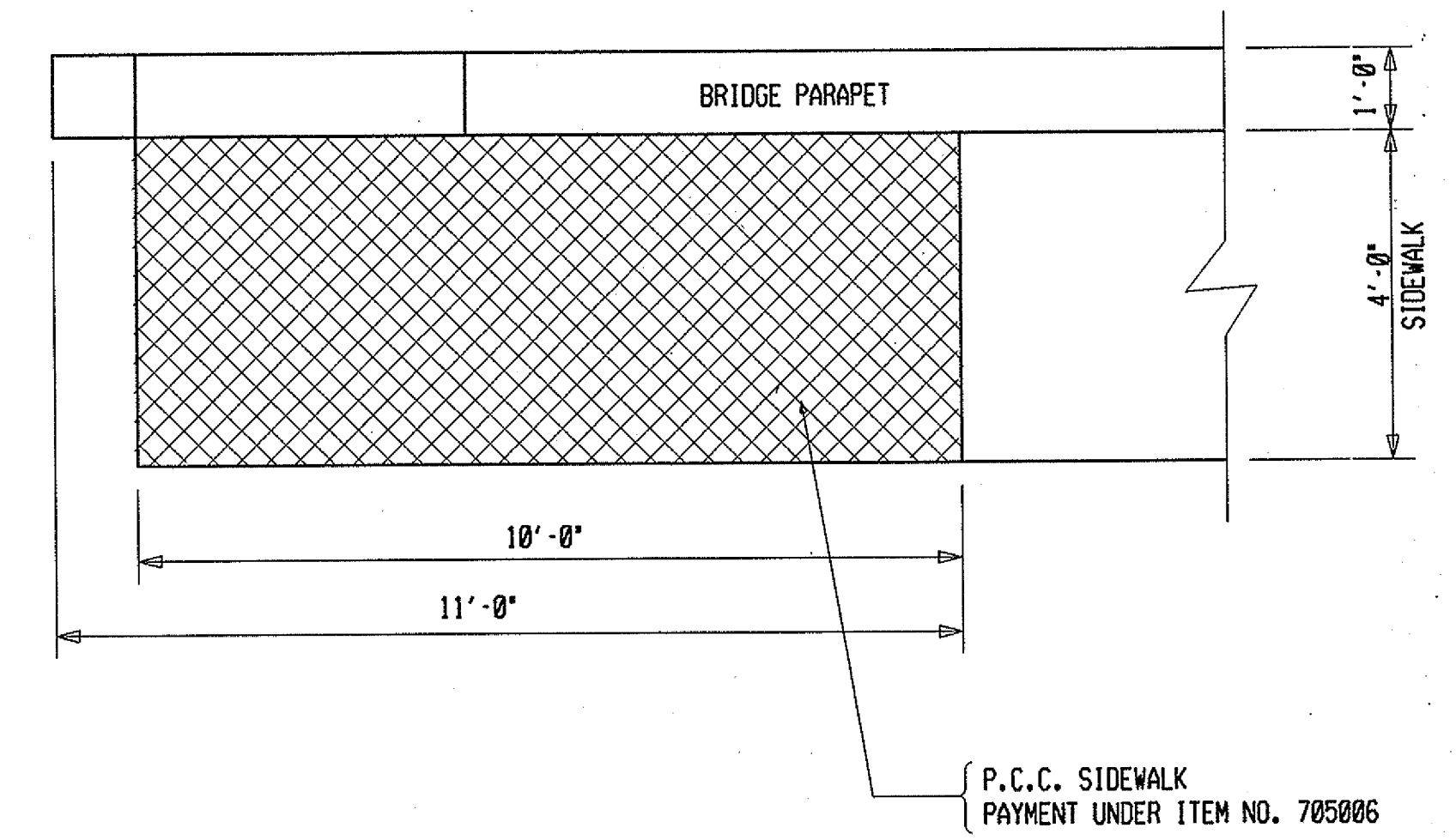
EXISTING PLAN



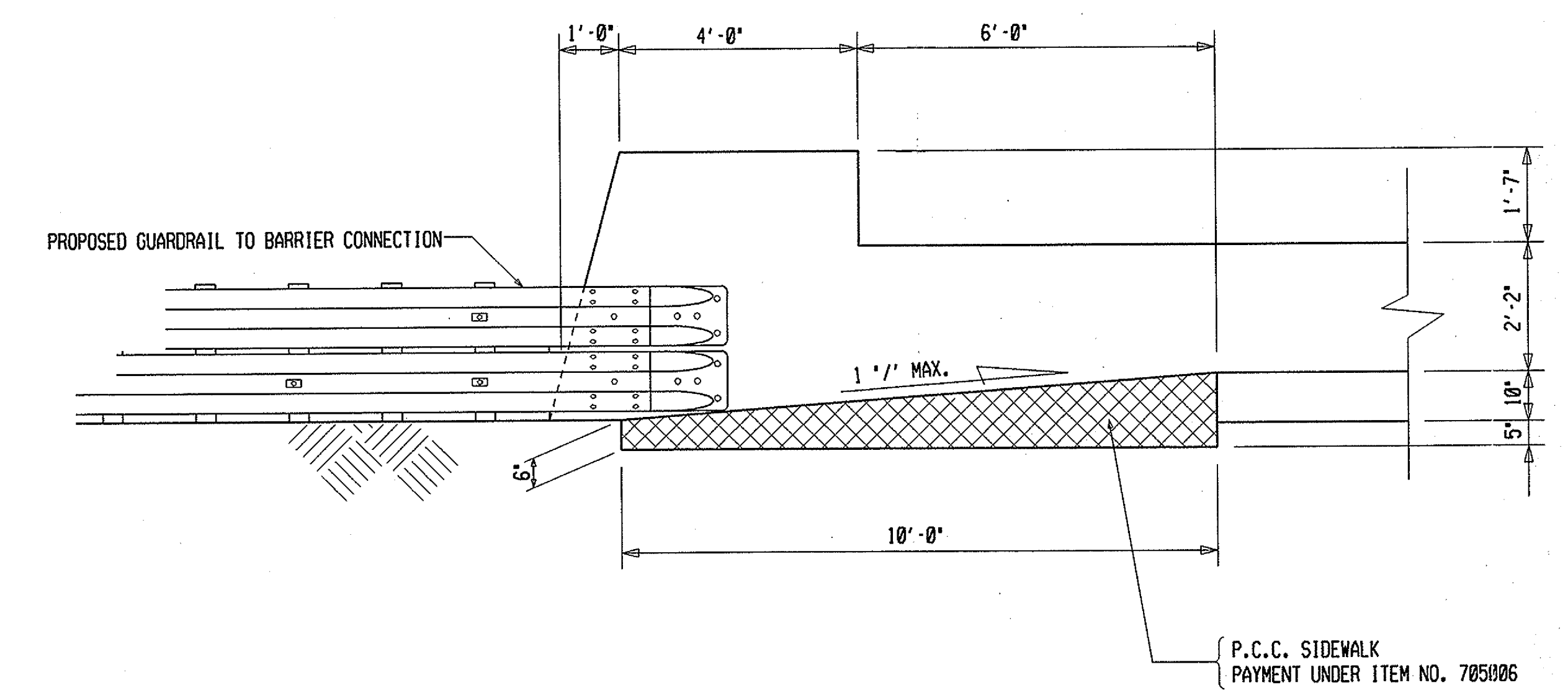
EXISTING ELEVATION



EXISTING SECTION A-A



PROPOSED PLAN



PROPOSED ELEVATION

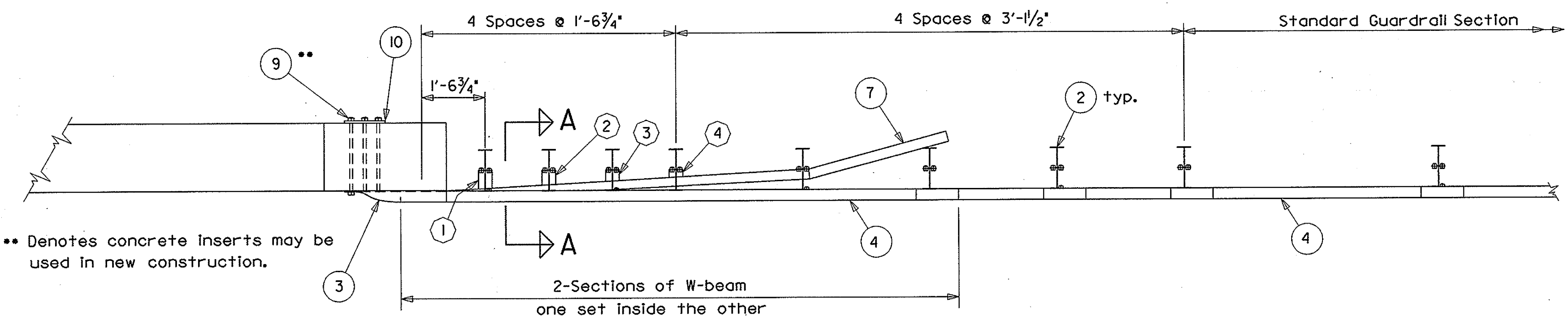
DETAIL OF DEPRESSED P.C.C. SIDEWALK AT WEST APPROACH OF BRIDGE (TYPICAL)

SCALE: 1/2" = 1'-0"

- NOTE: 1.) NORTHWEST CORNER SHOWN, SOUTHWEST CORNER SAME BUT OPPOSITE HAND.
2.) EXCAVATION FOR THE PLACEMENT OF THE NEW P.C.C. SIDEWALK SHALL BE PAID UNDER ITEM NO. 202000.

Guardrail to Barrier Connection (App. Type)

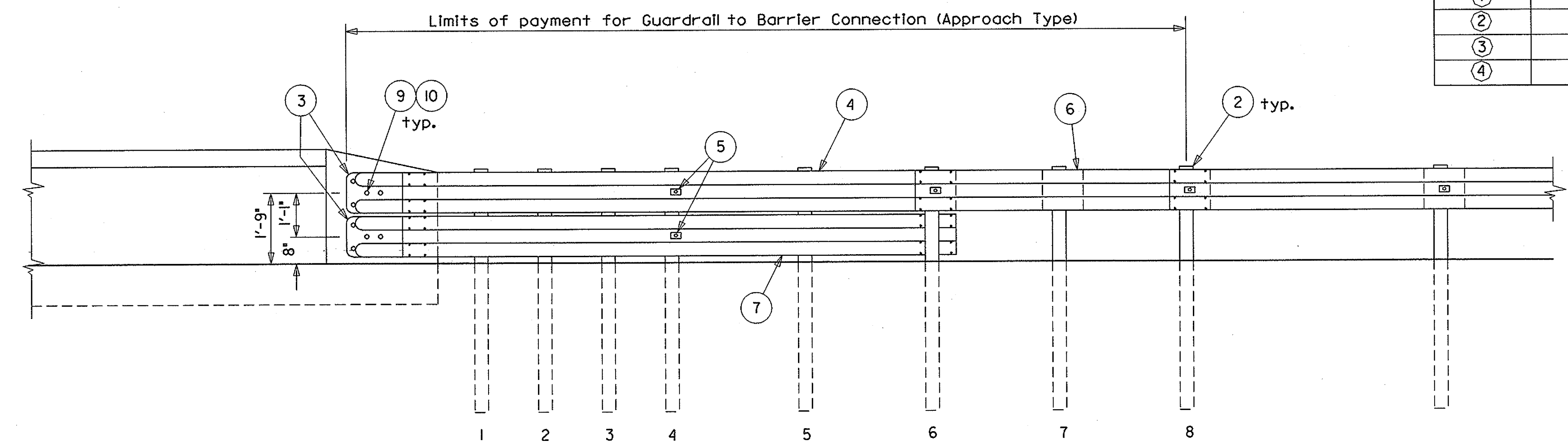
- Notes : 1. Rub Rail may be shop bent to facilitate installation in the last 3'-6 1/2".
2. Posts 1, 2, 3, 4, and 6 require an additional hole to attach lower blocks and/or Rub Rail.
3. Bottom wood blocks located on posts 1-4 are offset drilled to sit squarely on the post flange and secured with 5/8" Carriage bolts.
4. W-Beam is not bolted directly to posts 1-3 and post 5 and 7; bolt block directly to post.
5. Concrete inserts may be used in new construction to attach Terminal Connector to parapet.
6. (*) May substitute 3-5/8" A.S.T.M. A325 through bolts with bearing plate.
7. At post 7 back-up plate bolted to block only.
8. Guardrail section and terminal connectors shall be overlapped in the direction of travel.



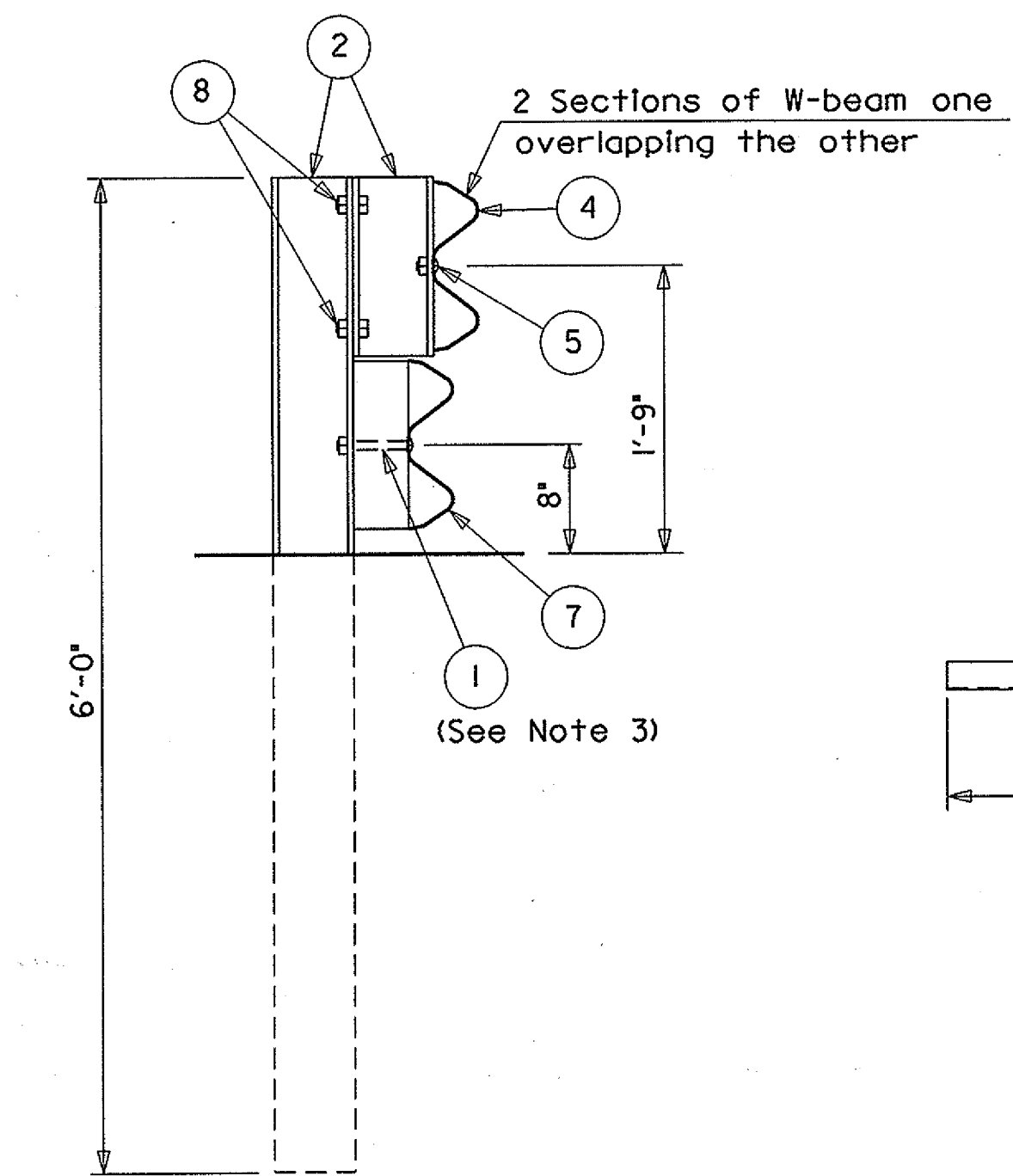
Plan
Scale : 1/2" = 1'-0"

Rub Rail Wood Blocks (7" x 4")	
Block	Thickness
1	5"
2	4"
3	3"
4	2"

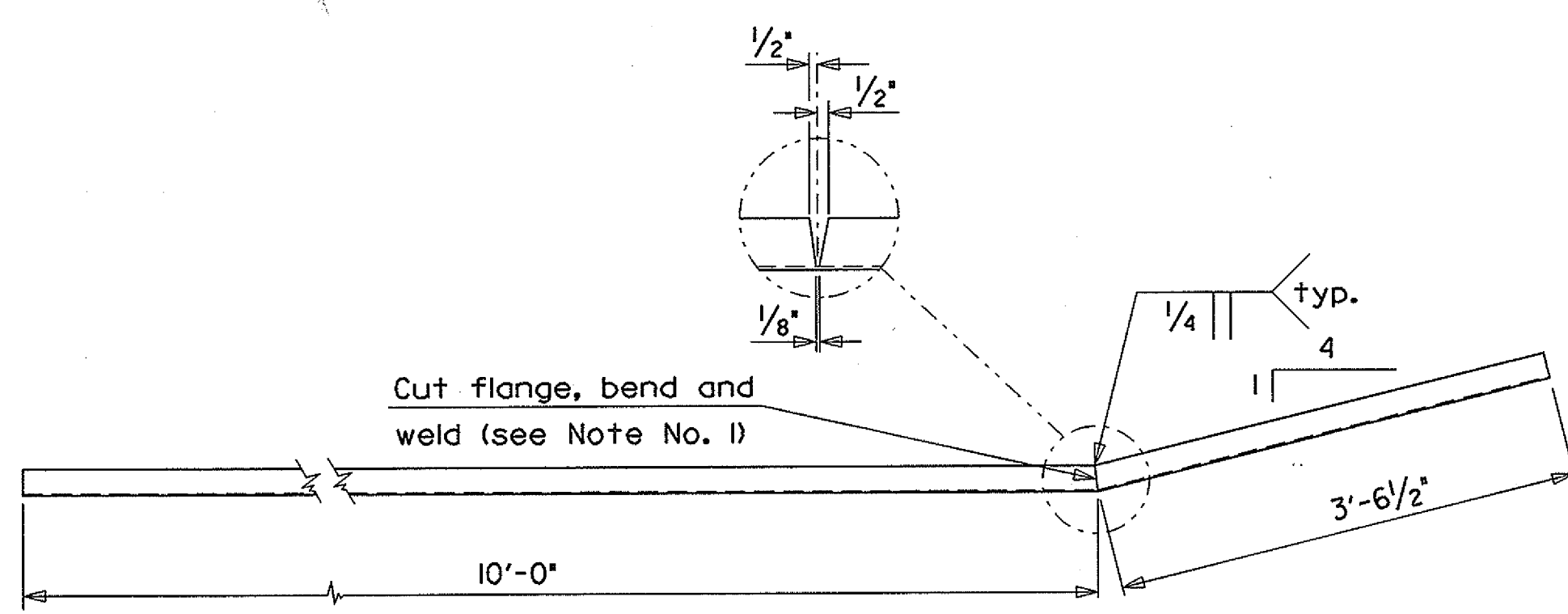
Legend	
Item	Description
1	5/8" Carriage bolt, nut and washer
2	W6 x 9 Galvanized Steel Beam Guardrail Post and Block (G-4-7)
3	Terminal Connector (G-5)
4	Rail Section (G-5)
5	5/8" Button Head bolt, Type A washer and Recess nut (G-4-7)
6	Back-up Plate (G-5)
7	Bent Rail Section (Rub Rail)
8	5/8" Hex bolt, nut and washer (G-4-7)
9	7/8" A.S.T.M. A325 Hex bolt, washer and nut (G-7-1)
10	5/8" Bearing Plate



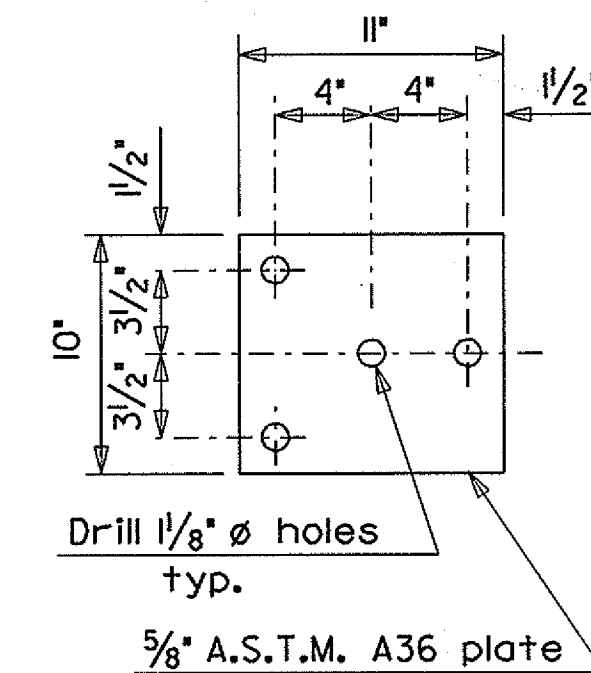
ELEVATION
Scale : 1/2" = 1'-0"



SECTION A-A
Scale : 1" = 1'-0"



Bent Rail Section (Item 7)
Scale : 1" = 1'-0"



Bearing Plate Detail
(Item 10)
Scale : 1/2" = 1'-0"

REVISIONS

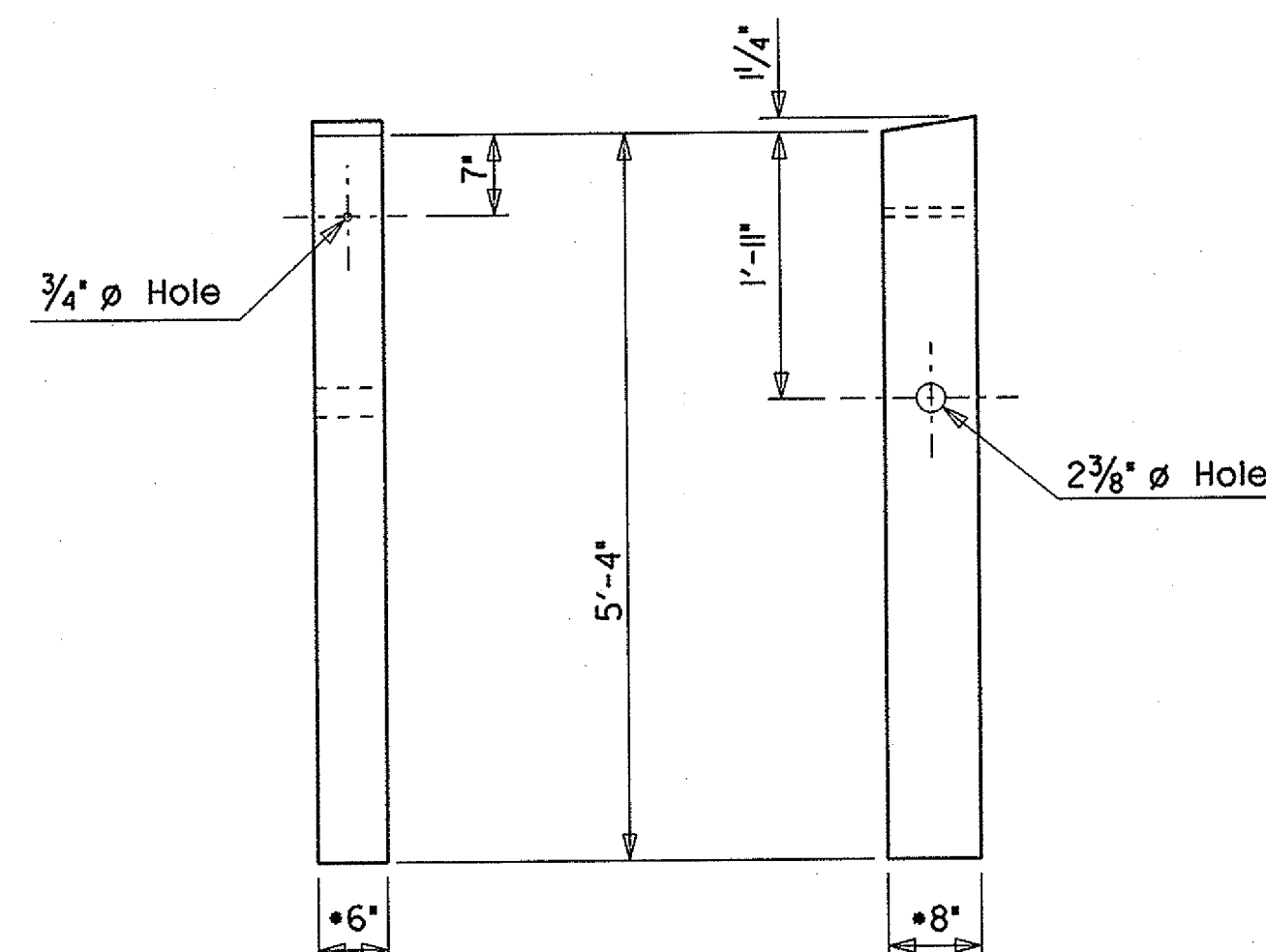
OS2-132-2014RAIL.DGN
PREL. TRACING
H.H.D.
DESIGN
D.M.O.
CHKD.

B. C. T. ASSEMBLY

Notes :

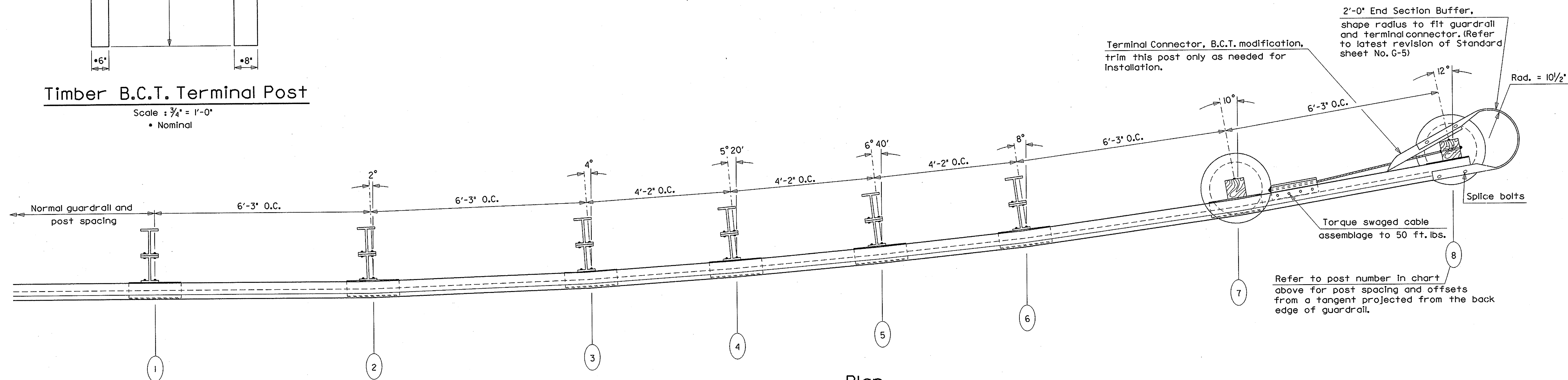
1. No curb shall project beyond the face of guardrail at any point and will not be permitted in the area designated.
2. This assembly is not to be used in conjunction with concrete curb under any circumstance.
3. The offset distances hereon shown are necessary for the Breakaway Cable Terminal to perform as intended and shall not be deviated from.
4. Timber B.C.T. posts shall have a stress grade of 1,200 psi. or more. Posts shall be rough sawn or S4S with nominal dimensions hereon indicated. These posts shall receive a preservation treatment in accordance with 1985 Delaware Standard Specifications.
5. The threads of all bolts shall be burred after installation of B.C.T. has been completed.

Post No's.	1	2	3	4	5	6	7	8
Tangent Distance	0'-0"	6'-3"	12'-5 $\frac{7}{8}$ "	16'-7 $\frac{11}{16}$ "	20'-9 $\frac{7}{16}$ "	24'-11"	31'-1"	37'-2 $\frac{5}{8}$ "
Offset	0'-0"	0'-1 $\frac{3}{8}$ "	0'-5 $\frac{1}{2}$ "	0'-9 $\frac{5}{8}$ "	1'-3"	1'-9 $\frac{1}{2}$ "	2'-9 $\frac{1}{2}$ "	4'-0"



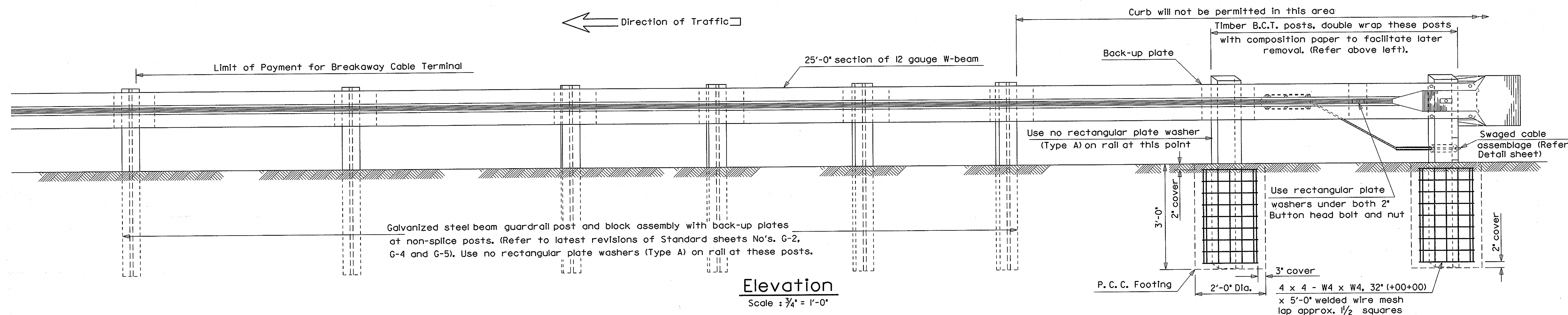
Timber B.C.T. Terminal Post

Scale : $\frac{3}{4}$ " = 1'-0"
• Nominal



Plan

Scale : $\frac{3}{4}$ " = 1'-0"



Elevation

Scale : $\frac{3}{4}$ " = 1'-0"

REVISIONS

/usr3/hank/bct.dgn

PREL. TRACING

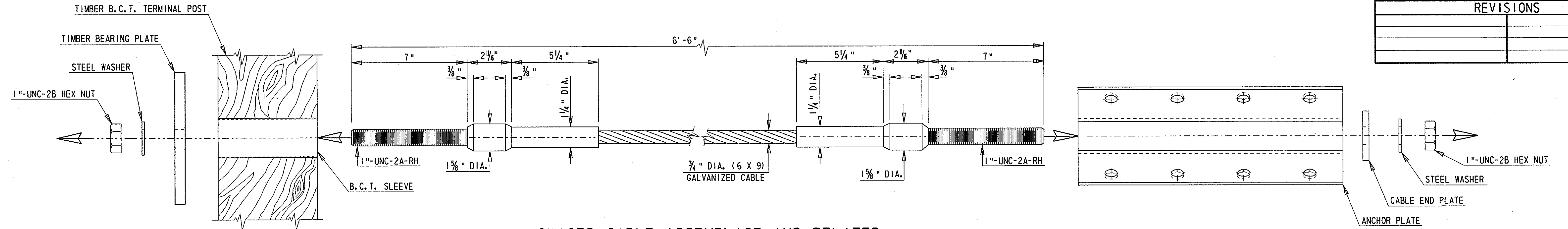
CHKD.

DESIGN

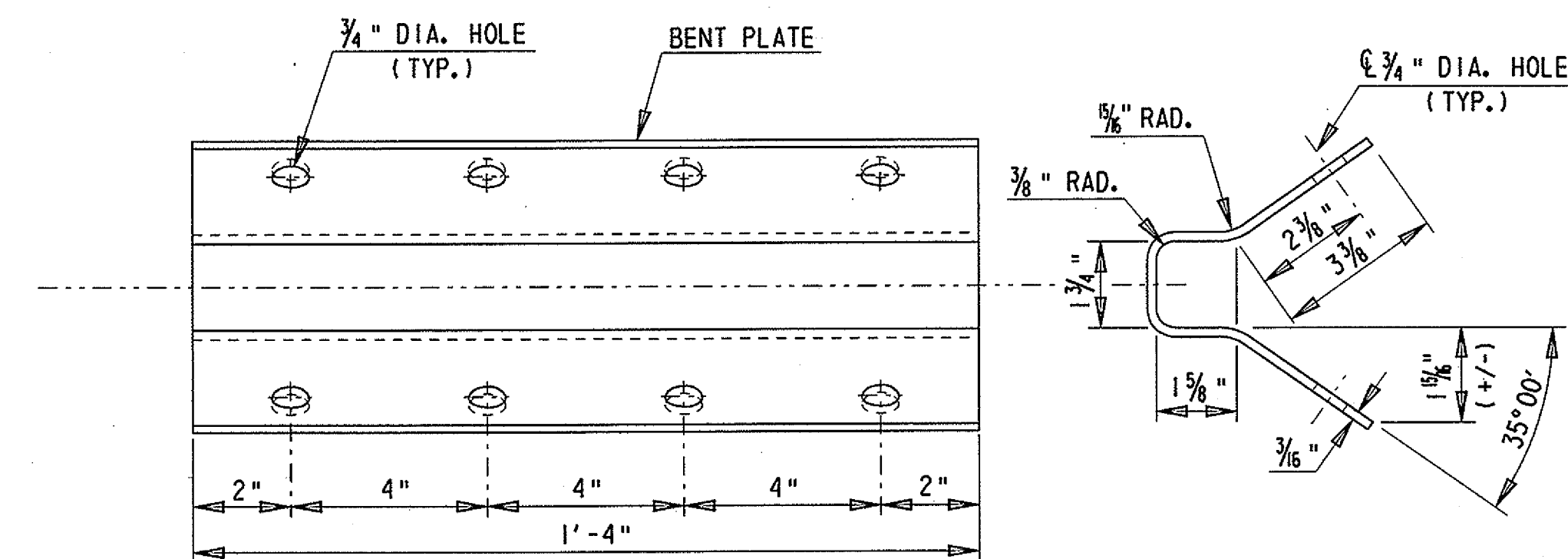
H.H.D.

B.C.T. ASSEMBLY
MISCELLANEOUS DETAILS

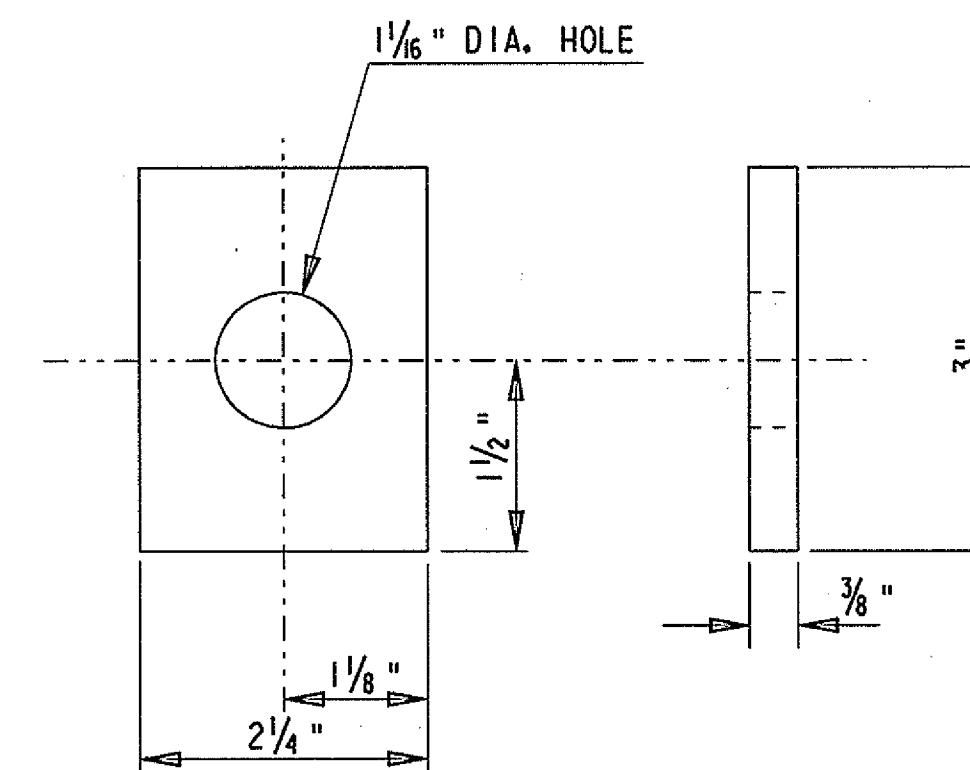
REVISIONS



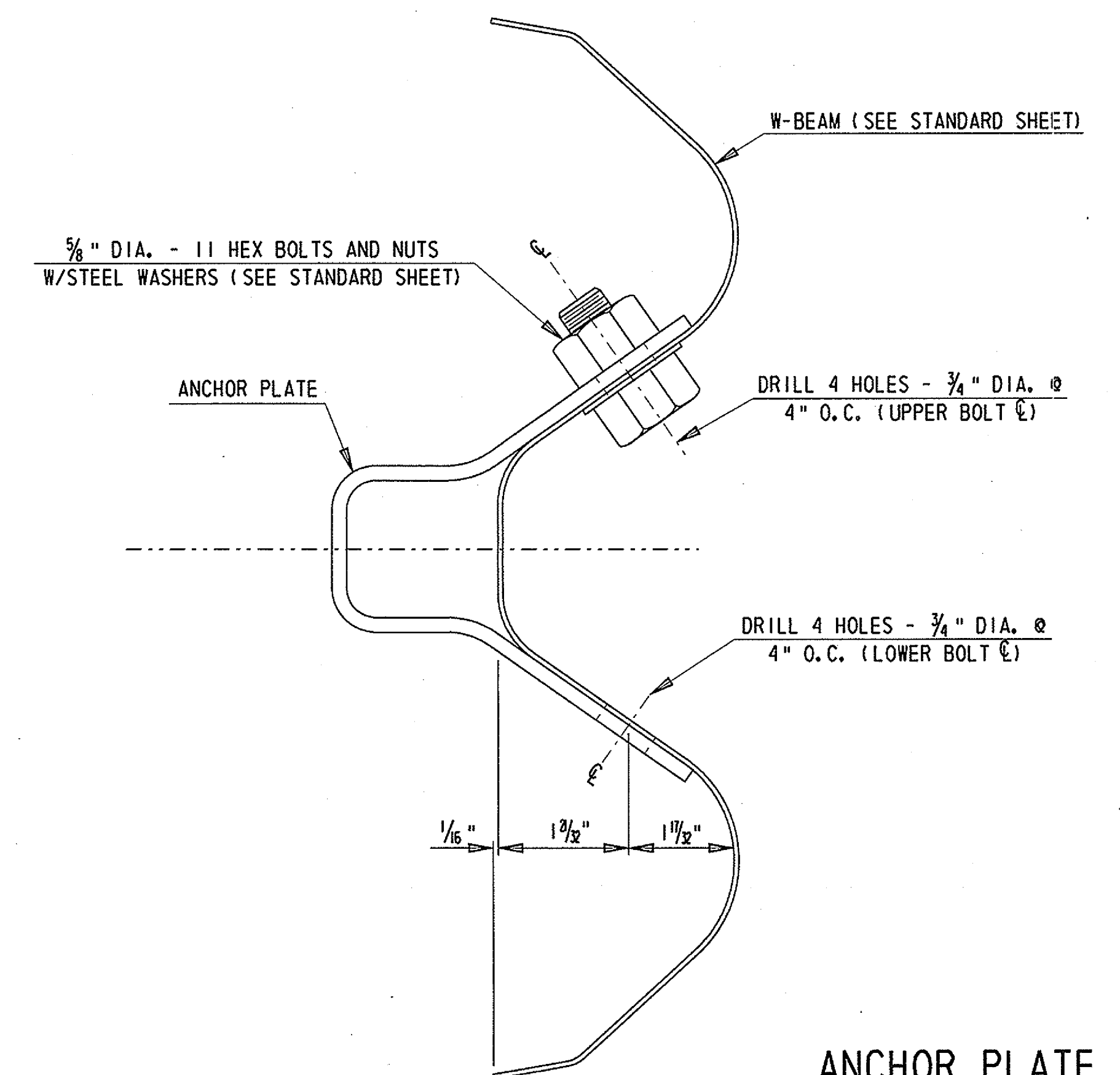
SWAGED CABLE ASSEMBLAGE AND RELATED
FASTENER HARDWARE ASSEMBLY SEQUENCE



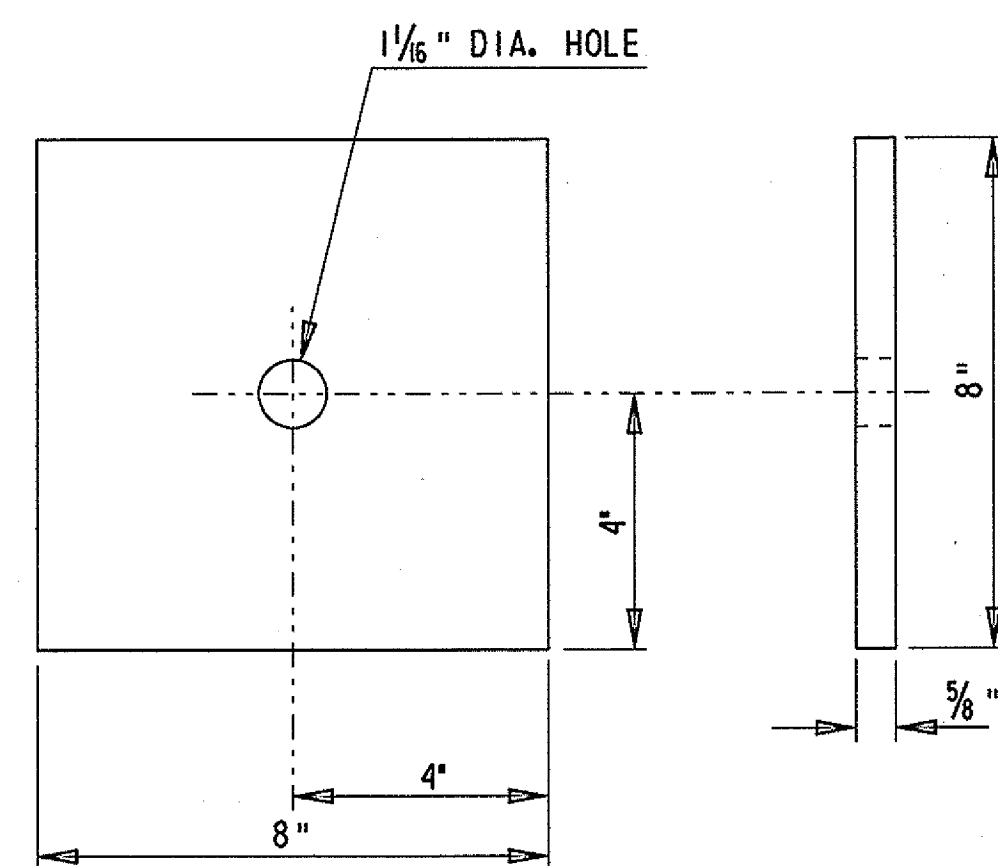
ANCHOR PLATE



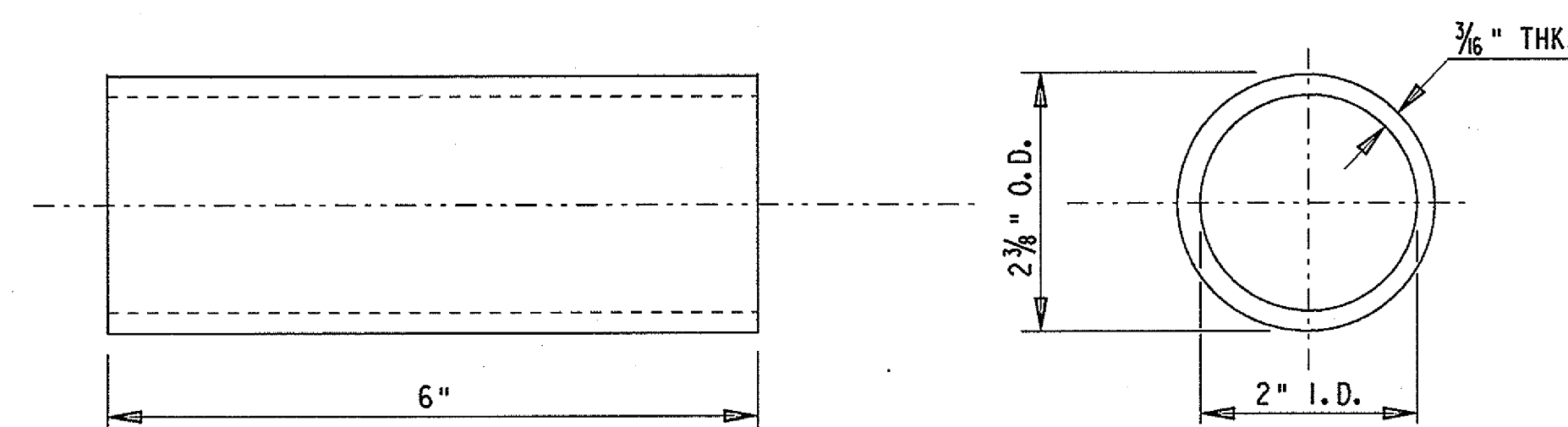
CABLE END PLATE



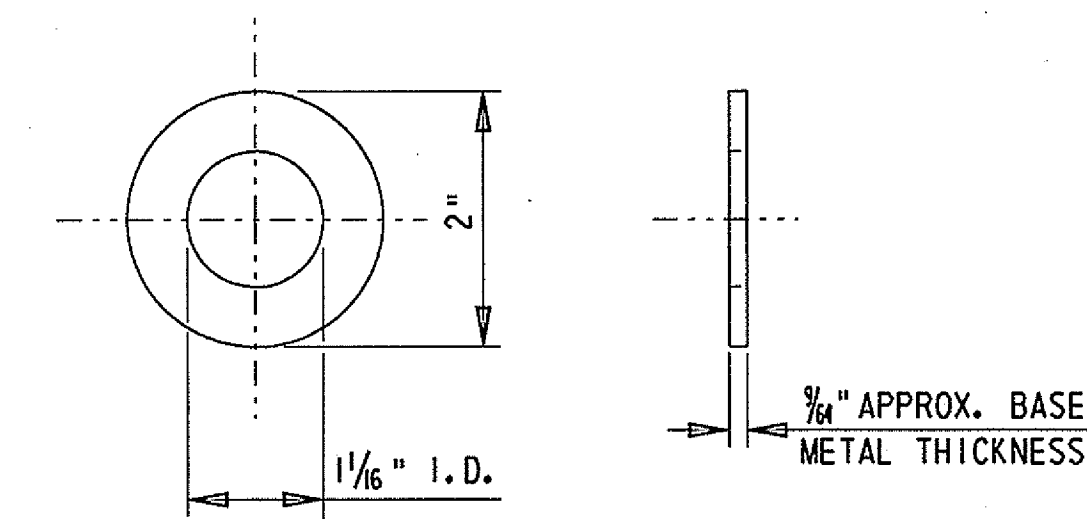
ANCHOR PLATE
TO W-BEAM
CONNECTOR DETAIL



TIMBER BEARING PLATE



B.C.T. SLEEVE



STEEL WASHER

NOTE :
DRAWING NOT TO SCALE.

PREL. TRACING MARTIN / MARTINE DESIGN HITCHENS / MAJOR / ZEMKOWSKI

←
DETOUR

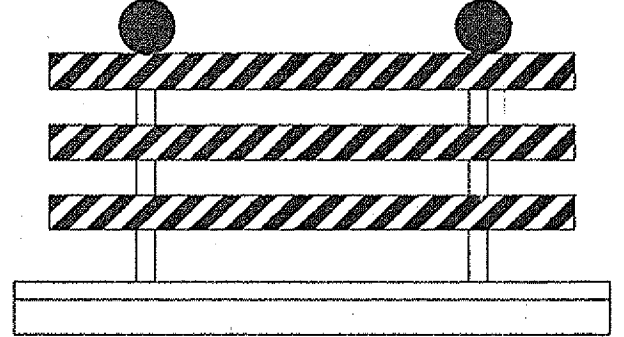
→
DETOUR

↑
DETOUR

←
DETOUR

→
DETOUR

END
DETOUR



ROAD
CLOSED

ROAD CLOSED
MILES AHEAD
LOCAL TRAFFIC ONLY

ROAD CLOSED
TO
THRU TRAFFIC

A

B

C

D

E

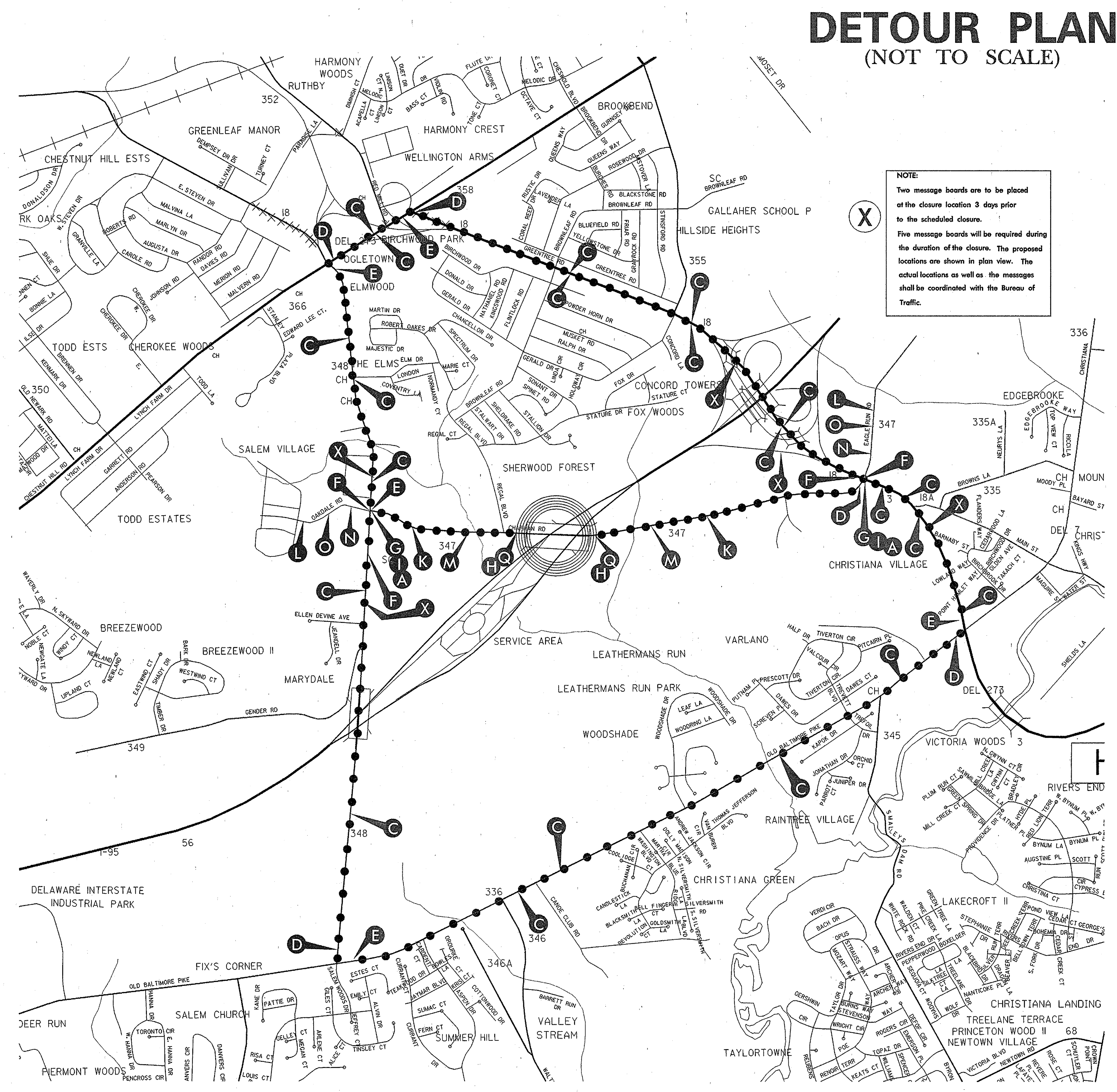
F

G

H

I

J



DETOUR PLAN

(NOT TO SCALE)

NOTE:
Two message boards are to be placed at the closure location 3 days prior to the scheduled closure.
Five message boards will be required during the duration of the closure. The proposed locations are shown in plan view. The actual locations as well as the messages shall be coordinated with the Bureau of Traffic.

CONTRACT	COUNTY	F.A.P. NO.	SHEET	TOTAL
94-074-07	N.C.	BRN-N347(1)	10	13

Br. 1-714 on Chapman Road over I-95

P

DETOUR AHEAD

N

DETOUR 500 FT

L

ROAD CLOSED AHEAD

O

DETOUR 1000 FT

M

ROAD CLOSED 500 FT

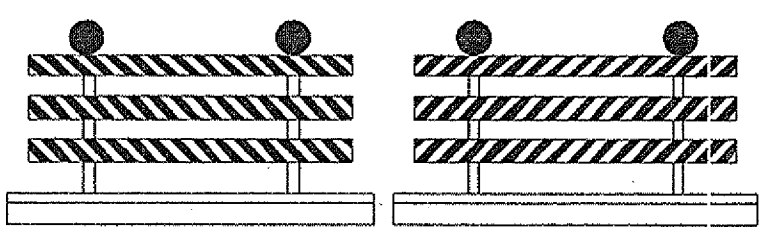
K

ROAD CLOSED 1000 FT

R

RAMP CLOSED

Q



NOTES

- SIGNS C,D,E, & F SHALL BE INSTALLED AND MAINTAINED BY TRAFFIC FORCES.
- THE CONTRACTOR SHALL COMPLY WITH GUIDELINES IN 'TRAFFIC CONTROLS FOR STREETS AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY AND EMERGENCY OPERATIONS' MANUAL, FOR LIGHTS, BARRICADES AND SIGNS. (AS PER LATEST REVISION)
- FIELD CONDITIONS MAY DICTATE CHANGES AT SOME TIME DURING THE LIFE OF THE CONTRACT. IN THE EVENT OF OMISSIONS OR CORRECTIONS, THE SIGNING PROVISIONS OF THE DELAWARE TRAFFIC CONTROL MANUAL WILL PREVAIL.
- SIGNS H THROUGH M, THE WORD (ROAD) SHOULD BE CHANGE TO R/R OR BRIDGE WHERE APPLICABLE.

RECOMMENDED	June 28	19 94	Brat A. Martine
RECOMMENDED	June 28	19 94	Keith A. Martin
RECOMMENDED		19	

Michael S. Hitchens
APPROVED CHIEF SAFETY INSPECTOR

July 12, 1994
DATE

APPROVED TRAFFIC ENGINEER

DATE